WHAT IS CLAIMED IS:

1. In apparatus for decoding compressed image data including frequency domain coefficients defining blocks of pixel values representing an image at a first resolution to provide an image at a reduced second resolution for display, said apparatus comprising:

first means responsive to a selected sub-set of said frequency domain coefficients for deriving said image of said reduced second resolution for display and including,

enhanced motion-compensation-unit (MCU) processing means; and

second means for operating said enhanced MCU processing means with blocks of pixel values representing said image at an intermediate third resolution lower than said first resolution and higher than said reduced second resolution.

2. The apparatus defined in Claim 1, wherein said reduced second resolution is substantially 1/4 of said first resolution; and

said second means operates said enhanced MCU processing at an intermediate third resolution which is substantially 1/2 of said first resolution.

3. The apparatus defined in Claim 1, wherein said image at said reduced second resolution for display is a progressive-scanned image.

4. The apparatus defined in Claim 1, wherein said image at said reduced second resolution for display is an interlaced-scanned image.

5. The apparatus defined in Claim 1, wherein:

said enhanced MCU processing means is responsive to base-layer pixel macroblock input values representing said image at said reduced second resolution and to pixel values representing said image at said intermediate third resolution for deriving motion-compensated base-layer prediction macroblock output pixel values as a first output and motion-compensated enhancement-layer prediction macroblock output pixel residual values as a second output.

6. The apparatus defined in Claim 5, wherein:

said second means comprises third means responsive to said selected sub-set of said frequency domain coefficients and to both said motion-compensated base-layer macroblock output pixel values and said enhancement-layer macroblock output pixel residual values for deriving both said base-layer macroblock input pixel values and said encoded enhancement-layer macroblock input pixel residual values.

7. The apparatus defined in Claim 1, wherein said second means comprises:

a base and enhancement-layer decimated-pixel memory;

unitary enhanced inverse discrete cosine transform (IDCT), filtering and pixel-decimation processing means responsive to a selected sub-set of frequency domain coefficients for deriving base-layer blocks of output pixel values representing said image at said reduced second resolution as a first output and output enhancement-layer blocks of output pixel residual values representing said image at said intermediate third resolution as a second output;

fourth means, including a first adder for adding corresponding pixel values of said motion-compensated base-layer macroblock output pixel values from said enhanced MCU processing means and said base-layer blocks of output pixel values from said unitary IDCT, filtering and pixel-decimation processing means, for deriving values that are stored as base-layer data in said base and enhancement-layer decimated-pixel memory;

fifth means, including a second adder and an enhancement-layer encoder, for adding corresponding pixel residual values of said motion-compensated enhancement-layer macroblock output pixel residual values from said enhanced MCU processing means to said enhancement-layer blocks of output pixel residual values from said unitary IDCT, filtering and pixel-decimation processing means to obtain a sum output from said second adder for encoding by said enhancement-layer encoder, for deriving second input values that are stored as encoded enhancement-layer data in said base and enhancement-layer decimated-pixel memory; and

sixth means for providing from said base and enhancement-layer decimated-pixel memory said base-layer pixel macroblock input values to said enhanced MCU processing means and for deriving said encoded enhancement-layer pixel macroblock input residual values applied as a second input to said enhanced MCU processing means from said stored encoded enhancement-layer data.

8. The apparatus defined in Claim 1, wherein:

said frequency domain coefficients define image information that includes luma blocks of pixel values representing intracoded (I) and predictive-coded (P) progressive-scanned images at said first resolution.

9. The apparatus defined in Claim 7, including:

seventh means comprising a sample-rate converter for deriving an ongoing display video signal from base-layer blocks of output pixel values.

10. The apparatus defined in Claim 1, wherein:

said reduced second resolution is substantially 1/4 of said first resolution; and

said intermediate third resolution is substantially 1/2 of said first resolution.

11. In a system for decoding compressed image data in the form of pixel blocks representing an image at a first resolution to provide an image of a reduced second resolution, a method comprising the steps of decompressing a pixel block of said first resolution by:

selecting a sub-set of frequency domain coefficients in said pixel blocks of said compressed image data;

processing elements of said sub-set of frequency domain coefficients to provide pixel data representing pixels comprising a spatially distributed sub-set of pixels in a pixel block of said image at a first resolution and excluding other pixels of that pixel block, said processing including

using data at an intermediate third resolution, lower than said first resolution but higher than said reduced second resolution, to supplement data from said reduced second resolution in forming predictions for motion compensation; and

formatting said pixel data representing pixels comprising said spatially distributed sub-set of pixels to provide said image of said reduced second resolution.

12. A method according to claim 11 including the step of,

selecting different spatially distributed sub-sets of pixels for interlace and progressive image output.

13. A method according to claim 11 wherein said formatting step comprises,

upsampling said pixel data representing pixels comprising a spatially distributed sub-set of pixels to provide said image of said reduced second resolution.

14. A method according to claim 11 wherein said processing step includes the step of,

selecting said spatially distributed sub-set of pixels based on desired PIP picture characteristic.

15. A method according to claim 14 wherein said PIP picture characteristic comprises at least one of (a) PIP picture size, (b) whether said PIP picture is interlace or progressive, and (c) PIP picture vertical and horizontal pixel resolution.

16. A method according to claim 11 wherein said formatting step includes the step of,

adaptively filtering pixel data representing pixels comprising a spatially distributed sub-set of pixels using a filter function selected based on at least one of, (a) motion vector type, (b) group of picture (GOP) structure, (c) a GOP boundary transition, (d) whether I, B or P frame, and (e) whether interlace or progressive frame reduced second resolution output required.

17. A method according to claim 11 wherein said formatting step includes the step of,

adaptively filtering pixel data representing pixels comprising a selected spatially distributed sub-set of pixels using a filter function selected from at least one of, (a) a vertical pixel data filter, (b) a horizontal pixel data filter, (c) a chrominance data filter, and (d) luminance data filter.

18. In a system for decoding compressed image data in the form of pixel blocks representing an image of a first resolution to provide an image of a reduced second resolution, a method comprising the steps of:

generating data representative of an image pixel block at an intermediate third resolution lower than said first resolution but higher than said reduced second resolution;

generating motion compensated pixel block data at said third resolution from pixel block data of said reduced second resolution supplemented by said intermediate third resolution data; and

deriving pixel data representing said image of said reduced second resolution from said motion compensated pixel block data at said third resolution.

19. A method according to claim 18 wherein the steps of claim 18 are performed for P frames exclusively of I and B frames.

20. A method according to claim 18 wherein the steps of claim 18 are performed for P frames and one of, (a) I frames and (b) B frames.

21. A method according to claim 18 including the step of

upsampling said pixel block data at said third resolution to provide image data of said first resolution.

22. A method according to claim 21 including the step of

downsampling said upsampled pixel block data of said first resolution to provide image data of said second resolution.

22. A method according to claim 21 including the step of

downsampling said upsampled pixel block data of said first resolution to provide said intermediate third resolution data.

23. A method according to claim 18 wherein

said pixel block data of said third resolution comprises residual data.